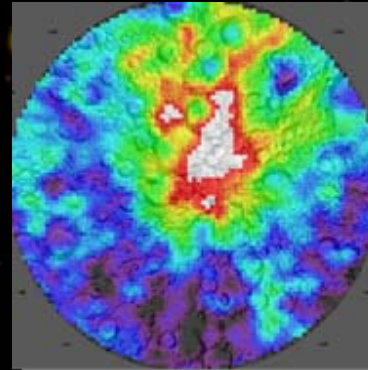
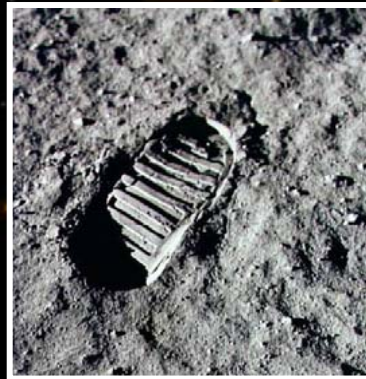
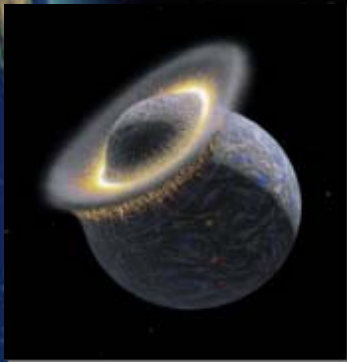


Implementing the Vision 2nd Space Exploration Conference



Science Enabled by NASA's Lunar Architecture



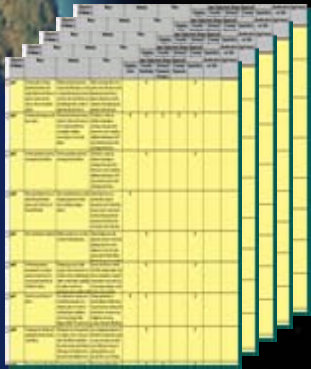
Laurie Leshin

NASA Goddard Space Flight Center
Lunar Architecture Team
Science Capability Focus Element Co-Lead

Lunar Architecture Team Science Capability Focus Element Activities



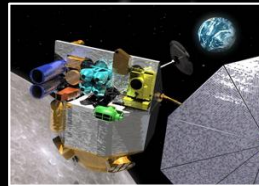
Objectives from
Global Strategy
Team



ALL Science
Objectives



Each Objective
Deconstructed to
Define Needed
Capabilities



Each Objective Mapped
to Architecture for
“Goodness of Fit”



Implementing the Vision

Science Objectives – to – Architecture Rating Scheme



1

Green – objective can be substantially accomplished by 2025 within the current architecture assuming the priority and funding are allocated

2

Orange – objective will very likely take longer than the 2025 time horizon to accomplish, but could be accomplished in an outpost-based architecture

3

Yellow – some part of the objective can be accomplished within the current architecture by 2025

4

Pink – the objective can be accomplished with a combination of outpost-based science and robotic sorties

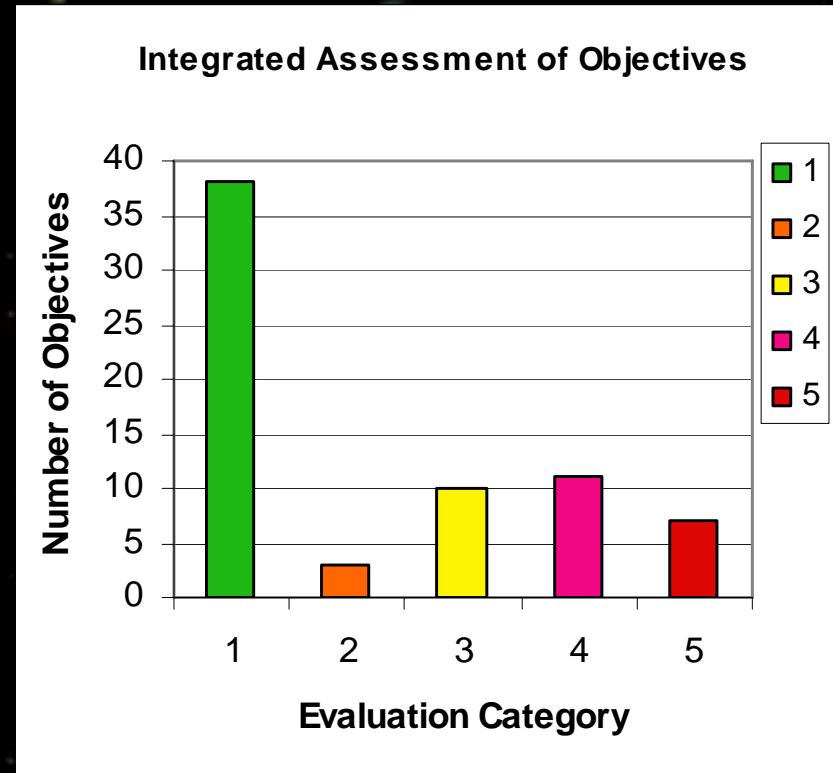
5

Red – the objective can really only be accomplished through addition of human sorties, or some other additional capability, to the current architecture

Overall Assessment



- 38 out of 69 rated objectives are GREEN (55%)
- The NASA Architecture provides many opportunities for science!
- Priorities must now be considered -- we probably cannot accommodate all GREEN objectives, and some YELLOW and PINK objectives are likely to be of high science priority



More on GREEN Objectives in Each Science Area

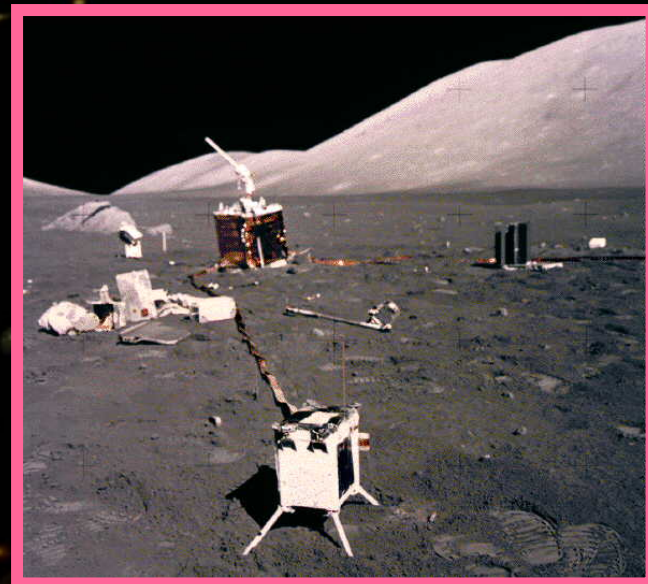


- **Geology:** Field studies that are either non-site specific (geologic process studies) or polar-focused (volatiles)
- **Astrophysics:** Small telescopes or other limited sensors that could be deployed near the outpost site
- **Heliophysics:** Relatively small sensors that could be deployed either robotically (some in orbit) or by humans
- **Earth Observation:** Most objectives require continuous view of Earth – therefore most are not achievable at a polar outpost location
- **Environmental Characterization and Operational Monitoring:** Most objectives can be accomplished through the robotic program and/or with small robotic packages deployed at the outpost site

Science Opportunities Beyond the Current Architecture



Yellow objectives typically require geological field work and sampling at the outpost location, PLUS other locations. However, progress can be made at a single location.



Pink objectives typically require deployment of instrument packages at sites around the Moon, creating a “network” of sensors

Summary



- The LAT Science Capability Focus Element deconstructed all science objectives provided by the Global Exploration Strategy Team and mapped the “goodness of fit” of these objectives onto the NASA Architecture
- Many science objectives across multiple disciplines can be accommodated within the architecture
- This work provides a foundation and possible starting point for community science prioritization discussions such as that to be held by the NASA Advisory Council at their Feb., 2007 Workshop